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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/796,283	03/10/2004	Zhipeng Zhang	010755.53274US	9368
23911 7590 12/31/2008 CROWELL & MORING LLP INTELLECTUAL PROPERTY GROUP P.O. BOX 14300 WASHINGTON, DC 20044-4300			EXAMINER ABEBE, DANIEL DEMELASH	
			ART UNIT 2626	PAPER NUMBER
			MAIL DATE 12/31/2008	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/796,283

Applicant(s)

ZHANG ET AL.

Examiner

Daniel D. Abebe

Art Unit

2626

Period for Reply -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SF 298)
- Paper No(s)/Mail Date ____.
- 4) ☐ Interview Summary (PTO-413)
- Paper No(s)/Mail Date ____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: ____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 6 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rahim (5,960,397) in view of Zhang et al. "Effects of tree-structure clustering using piecewise transformation" pp.29-30.

As to claim 1, Rahim teaches a noise adaptation system of speech model for adapting a speech model for any noise to speech to be recognized in a noisy environment, said speech model being learned by using clean speech data (base speech model), said system comprising:

clustering means for clustering noisy speech models defining different sets of N acoustic environments (noise);

speech model space generating (training) means for producing a speech model space, using a known utterance, for each set of the defined N acoustic;

parameter extracting means for extracting a speech feature parameter of input noisy speech to be recognized;

selecting/classifying means for selecting an optimum/projector acoustic environment (noisy speech) model from the model space generated by said speech model space generating means; and;

transformation means for applying linear transformation to the base model using the selected particular acoustic environment model so that the base model provides a further increased likelihood for the noisy speech (Figs.1-4; Col.3, line 7-Col.4, line 10; Claims 1-2).

It is noted that Rahim doesn't teach where the noisy speech model is tree structured. Zhang however, teaches a noise adaptation system for adapting speech model for any noise to the speech where a noise data is clustered and a noisy speech model space is generated and wherein the noisy speech model is tree structured and generated based on the result of the noise clustering (Par.2.2; Fig.1). the tree structure speech model would be obvious to one of ordinary skill in the art in order to generate fast and efficient recognition process.

As to claim 6, Rahim teaches a noise adaptation method for adapting a speech model for any noise to speech to be recognized in a noisy environment, said speech model being learned by using clean speech data (base speech model), said method comprising the steps of:

- clustering for clustering noisy speech models defining different sets of N acoustic environments (noise);

- speech model space generating (training) for producing a speech model space, using a known utterance, for each set of the defined N acoustic;

- parameter extracting for extracting a speech feature parameter of input noisy speech to be recognized;

selecting/classifying for selecting an optimum/projector acoustic environment (noisy speech) model from the model space generated by said speech model space generating means; and;

transformation means for applying linear transformation to the base model using the selected particular acoustic environment model so that the base model provides a further increased likelihood for the noisy speech (Figs.1-4;Col.3, line 7-Col.4, line 10).

And Zhang teaches a noise adaptation method for adapting speech model for any noise to the speech where a noise data is clustered and a noisy speech model space is generated and wherein the noisy speech model is tree structured and generated based on the result of the noise clustering (Par.2.2; Fig.1).

As to claim 7, Rahim teaches a memory means for storing a noise adaptation program for adapting a speech model for any noise to speech to be recognized in a noisy environment, said speech model being learned by using clean speech data (base speech model), said program comprising the steps of:

clustering for clustering noisy speech models defining different sets of N acoustic environments (noise);

speech model space generating (training) for producing a speech model space, using a known utterance, for each set of the defined N acoustic;

parameter extracting for extracting a speech feature parameter of input noisy speech to be recognized;

selecting/classifying for selecting an optimum/projector acoustic environment (noisy speech) model from the model space generated by said speech model space generating means; and;

transformation means for applying linear transformation to the base model using the selected particular acoustic environment model so that the base model provides a further increased likelihood for the noisy speech (Col.4, lines 48-60).

And the program for performing the noise adaptation for adapting speech model for any noise to the speech is inherent in Zhang's system.

Allowable Subject Matter

Claims 2-5 and 8-9 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: claim 2 is allowable because the prior arts of record alone or in combination do not teach the clustering step generates said noise-added speech by adding said noise to said speech in accordance with a signal-to-noise ratio condition, subtracts the mean value of speech Cepstral of the generated noise-added speech, generates a Gaussian distribution model of each of pieces of generated noise-added speech, and calculates the likelihood between the pieces of noise-added speech to generate a likelihood matrix to provide a clustering result.

Claims 3-5 and 8-9 are allowable since they depend on claim 2.

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 1-9 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-7 of U.S. Patent No. 7,424,426. Although the conflicting claims are not identical, they are not patentably distinct from each other because the claimed subject matter in the present invention is an obvious variation of an invention that is claimed in the patent claims.

Information Disclosure Statement

The information disclosure statement filed 11/05/08 fails to comply with the provisions of 37 CFR 1.97, 1.98 and MPEP § 609. the A5 reference doesn't include the publication date.

Response to Arguments

Applicant's arguments with respect to claims 1, 6 and 7 have been considered but are moot in view of the new ground(s) of rejection.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Daniel D. Abebe whose telephone number is 571-272-7615. The examiner can normally be reached on monday-friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Hudspeth can be reached on 571-272-7843. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Daniel D Abebe/
Primary Examiner, Art Unit 2626

